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NUCLEAR DEVELOPMENT AND PROLIFERATION

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DACCA TO SEEK DEVELOPMENT OF NUCLEAR POWER

Dacca THE BANGLADESH TIMES in English 6 Sep 82 p 1

[Text] The DCMLA and Minister for Energy and Mineral Resources Air Vice-Marshal Sultan Mahmud, left Dacca on Sunday night for London en route to Vienna to attend the international conference on nuclear power experience to be held at the Austrian capital from September 13, reports BSS.

The DCMLA who will lead a three-member delegation at the conference will address the opening session at the invitation of International Atomic Energy Agency (IAEA).

About 37 countries including Bangladesh will participate in the conference which will be attended by renowned nuclear experts of the world.

Air Vice-Marshal Sultan Mahmud during his stay in Vienna will also discuss with the Director General of IAEA and other members of the participating countries the question of international assistance for introduction of nuclear power in Bangladesh. He is also likely to request concerned authorities to assist Bangladesh in the development of nuclear laboratories at Savar and in other BAEC research programmes.

The DCMLA will also discuss greater participation by Bangladesh in the regional cooperation for Asia programme of IAEA, especially in the field of food preservation by radiation and development of electronics.

The members of the delegation include Dr Anwar Hossain, Chairman, BAEC and Mr Nurul Islam, an atomic scientiest.

CSO: 5100/7161

EDITORIAL HAILS OPENING OF NUCLEAR REACTOR COURSE

Dacca THE BANGLADESH OBSERVER in English 1 Sep 82 p 5

[Editorial]

[Text] As a developing country Bangladesh is in desperate need of making up leeway scientifically and technologically. It need hardly be said that in today's world socio-economic viability rests essentially on the rate of progress in scientific research and achievement. And the disparity that now exists between the industrialised (developed) and undeveloped parts of the world is one due to the persisting gap in the latter's technological progress. We may, in this context, note that however in the developing world the middle-income group of the nations (according to a World Bank report) have been narrowing down the technological lacuna and have registered over the years a relatively marked rise in national growth. But the position of the low-income countries, such as Bangladesh, remains still one that calls for a positive bid to raise its scientific and technical grading by all possible means of training and research and by making optimum use of local human and other resources.

And while, generally speaking, our scientists and technologists have been doing their best in their respective areas to achieve results, tangibly contributing to industrial and agricultural growth, their endeavour in the specialised and sophisticated branches of modern science and technology is yet to be made productive on the scale commensurate with our needs in such vital sectors as power, etc. In such a background the reported inauguration of a six-month training course for the technicians to run the nuclear research sector at the Atomic Energy Research Establishment (AERE) at Savar marks a remarkable step forward in the right direction.

We agree with the Chairman of the Institution that this is an event of historic significance. Undoubtedly with this Bangladesh makes its entry into the modern world of science and sophistication in the true sense The facility has reportedly set up a training course for 31 technicians to begin with. Training of manpower in this specialised field and nuclear power generation to meet our increasing fuel needs are among those essentials of industrial and economic reconstruction which cannot wait any longer. And much will certainly depend on the level of proficiency attained through the training course just initiated. We believe those in charge of the course and the institution will ensure results justifying the hopes raised by a national venture in a hitherto inaccessible area of science and technology

CSO: 5100/7160

AEC AGREES TO SET UP NUCLEAR POWER BOARD

Bombay THE TIMES OF INDIA in English 29 Aug 82 p 1

[Article by S. Kumar]

[Text] THE Atomic Energy Commission has agreed in principle to set up an independent atomic energy regulatory board (AERB), similar to the Nuclear Regulatory Commission of the United States.

The safety review committee (SRC) of the department of atomic energy (DAE) is currently examining the proposal and is engaged in giving a concrete shape to the AERB. The major task before the committee seems to be the selection of suitable non-DAE members for the board.

The AERB will function under the Atomic Energy Commission. The existing division of radiological protection will come under the jurisdiction of the new board.

The constitution of AERB will be a significant step in the national nuclear energy programme for several reasons. At present, the [illegible] under the control of the DAE pass judgment on the safety of the DAE's own projects and the credibility of such reports has sometimes become suspect.

Also, the entire atomic energy programme will be able to gain a better public image if it is given a clean chit by an independent authority.

The latest International Atomic Energy Agency's codes for safety of nuclear plants stipulates the organisation of a "regulatory body." It should be "a national authority or a system of authorities designated by a member state, assisted by technical and other advisory bodies and having the legal authority for conducting the licensing process for issuing licences and thereby for regulating nuclear power plant siting, construction, commissioning, operation and decommissioning or specific aspects thereof."

One of the major functions of the regulatory board would be choosing the sites for new nuclear installations. The perennial dilemma can be resolved by the AERB which is expected to take an impartial decision purely on technical grounds. For example, the selection of a site for the fourth atomic power plant at Narora in Uttar Pradesh had been often criticised since the plant is located at a seismic zone.

The IAEA, after several years of deliberation among member countries, has brought out consolidated codes and supplementary safety guides for identifying and implementing good safety practices in all nuclear installations in the world. India has played an important role in formulating the codes.

Some of the IAEA codes of practice have already been examined by India. However, India should evolve its own codes of practice to suit its plants and the IAEA codes would have to be modified for that purpose. The new codes have already been circulated to Indian experts and formulation of an Indian guide is under progress.

As a part of this exercise, the DAE had organised [illegible] lectures on the IAEA code and guides with special reference to quality assurance in nuclear power plants at the BARC here yesterday and today. About [illegible] scientists and engineers of the DAE participated in it.

In the opinion of a senior nuclear energy expert, mere organisation and techniques were not enough for quality assurance but the discipline and attitude of the individual performing the quality control [illegible] was equally important.

CSO: 5100/7151

ACCUSATIONS OF TARAPUR PACT MISMANAGEMENT NOTED

New Delhi PATRIOT in English 1 Sep 82 p 2

[Text] HAS there been "mismanagement" on the part of the Indian delegation accompanying the Prime Minister Indira Gandhi to the United States, in handling the Tarapur question which is now creating a host of problems over the terms on which France is to supply enriched uranium for the two Tarapur reactors?

Or is it a case of the French availing of some loopholes in the Indo-US agreement in order to use the Tarapur uranium for garnering big economic benefits in their coming round of talks in New Delhi over some major projects under contemplation by the two countries?

Probably it is both; there are indications that it is a dual combination of factors which is posing for India a difficult choice in relation to the provision of enriched uranium by France for Tarapur. It is already clear that there has been some bungling by over-zealous men in the Prime Minister's secretariat—none else than the Principal Secretary to the Prime Minister, Mr Alexander, was incharge—in examining the scientific/technological aspects of the Tarapur agreement between India and United States.

This, it now appears, was the result of top Indian scientists not being associated with the final round of negotiations for the Tarapur agreement. Dr Sethna, India's atomic energy chief, did not join the delegation to Washington, and reports are that he was not fully satisfied with several aspects of the agreement, and specifically the terms on which France was to provide the enriched uranium.

It now turns out that Dr Sethna's premonitions are coming true. A situation that could have been avoided by obtaining prior French clarification on the terms on which Paris would provide the enriched uranium, is seen to be now developing because of what could be sheer ineptitude and lack of technical understanding on the part of those handling the talks. This is obvious since the basic concept of the Indo-US agreement, namely, of getting the fuel from France, had crystallised several months earlier.

The prime issue, it now emerges, is of the nature of the IAEA safeguards that the French want to go with the uranium for Tarapur. While broadly it has been known that the French have been seeking IAEA safeguards, it has also been made known by the French that they are certainly not against reprocessing of the spent fuel, especially if the plutonium thus available is made use of in fast breeder reactors.

However, IAEA safeguards' concept itself has been evolving. The version of the IAEA safeguards enforced till as late as 1975 was much less complex than the present version, which seeks such clauses as the "pursuit" clause. If the present-day version of IAEA safeguards were to be accepted—and interpretations count a great deal here—then not only Tarapur but several other plants in the line of usage of plutonium would come in its ambit.

Some observers, however, are prone to believe that the French stance is at the moment rigid, but would gradually show greater flexibility. The Indo-French parleys in the coming months involve negotiations on several key projects, from the Mirage to several big economic ventures. The French are prone to make gestures on these occasions, but would probably, expect a responsive stance on the part of India.

—IPA

CSO: 5100/7155

TARAPUR ARRANGEMENT CALLED 'A BUNGLED BUSINESS'

Calcutta THE STATESMAN in English 2 Sep 82 p 8

[Editorial]

[Text]

THE inexcusably amateurish manner in which India agreed in principle to a new arrangement for the supply of enriched uranium for Tarapur, promptly letting the agreement be advertised as the most notable achievement of Mrs Gandhi's visit to the USA and then beginning to discover all that remained unsettled, will be clear even from a brief resume of the reported developments. The notion was first created of a magnanimous U.S. gesture, strengthened by some American criticism of a "surrender" to India. But even before a former U.S. Ambassador pointed out that India had been the "more generous party giving up more than the USA", differences became apparent between U.S. and Indian interpretations of future provisions regarding the reprocessing of spent fuel. The Prime Minister maintained, both in the USA and on her return, that India would have the right to reprocess; but the Americans said nothing to confirm this. A more serious doubt arose soon about French intentions. Mr Claude Cheysson, the French Foreign Minister, indicated in New Delhi that Paris would not ask for "joint determination" for reprocessing or special safeguards beyond those provided for in the original agreement with the USA and its subsequent elaboration. But an entirely different situation was created when a note from Paris proposed a fresh safeguards agreement with the International Atomic Energy Agency. Such an agreement would include a perpetuity clause, providing for continuing safeguards even after the termination of fuel supply, and—more important—a pursuit clause extending safeguards even to nuclear facilities using by-products of the fuel supplied. In other words, if plutonium extracted from Tarapur's spent fuel is used to operate a fast breeder reactor, the latter too would attract safeguards and international inspection.

If New Delhi has not publicly said anything about the apparent change in the French stand, it is probably because it had not earlier taken care to make sure what it was bargaining for. What exactly the Americans had arranged with the French should have been carefully examined before the arrangement was accepted in principle. In fact, the terms should have been checked with the French themselves. It is curious that Mr Cheysson should have led New Delhi to believe that there would be no unacceptable condition. But it was up to the Indian side to satisfy itself from the technical provisions instead of relying on a breezy non-technical statement by the visiting Foreign Minister. The Indian officials accompanying Mrs Gandhi to Washington had no technical expertise to judge the full implications of the arrangement proposed by the Americans; nor does it appear that there was any expert evaluation immediately afterwards. The result now is a stalemate in the negotiations with France. The scheduled visit by a French delegation to New Delhi to discuss the commercial terms and technical arrangements for fuel supply has been indefinitely postponed. The substantive issues may be discussed when Dr Homi Sethna meets French atomic officials during the IAEA annual conference in Vienna in about a fortnight, but the final outcome will depend on a high-level policy decision in Paris. Even if the decision enables final agreement to be reached, New Delhi will not easily live down the ineptitude it has displayed so far. If no agreement is possible, relations with both France and the USA will be limited. Is the search for external supply worth the political price, especially when Indian scientists claim to have developed an alternative fuel at a cost of Rs 25 crores? The lesson from the controversy over Tarapur fuel has not yet been learnt.

CSO: 5100/7157

[illegible]

[illegible] IAEA and the recipients had been drawn up after the inception of the IAEA. The NPT safeguards have also to be administered through the IAEA. All these steps have been taken with a view to strengthening the regulatory role of the IAEA to build a strong non-proliferation regime.

[illegible] seemed to have assumed that mere support of a [illegible] non-proliferation regime would lead to the evolution of a [illegible] non-proliferation regime in course of time.

While they welcomed the U.S. "Atoms for Peace" proposal and the setting up of the IAEA, [illegible] nations insisted on the universal application of safeguards without discrimination. Those who went in for nuclear weapons originally cannot escape the responsibility of further proliferation, and it is only by submitting to the rules of a universal nuclear non-proliferation regime (without exceptions and privileges) by all States that proliferation can be effectively dealt with.

Technically, safeguards are meant to prevent, detect or deter any diversion of nuclear material (U-235 or Pu-239) used in nuclear research and power reactors from legitimate peaceful uses to the production of nuclear arms. When the IAEA Statute was under negotiation, India (having laid the foundation of a civilian nuclear programme), the only developing nation from Asia and Africa, and Brazil from Latin America, were invited to the working level meeting of 12 States to discuss the IAEA Statute. In fact, as early as 1954, India was reminding the UN General Assembly that developing nations should not be treated as the "hewers of wood and drawers of water" in regard to nuclear technology for peaceful uses. "The United Nations should not directly or indirectly find itself in a situation of assisting colonial exploitation".

At the level of the negotiations of the IAEA, India referred to the "inalienable" right of nations to produce the fissionable materials required for nuclear power programmes and asserted that she will accept only "a universal" safeguards system but not one "imposed only on a group of States, namely those receiving aid from the Agency. If, however, as would be the case under the provisions of the draft Statute of the Agency, a large part of the world is subject to controls and others free from them, we will stand on the brink of a dangerous era, sharply dividing the world into atomic "haves" and "have nots", dominating the Agency. Such a division would in itself, by creating dangerous tensions, defeat the very purpose of the safe-guards, that is, to build a secure and peaceful world".

According to India, the draft Statute of the Agency "gives the Agency power to interfere in the economic life of States which come to it for aid, through the control over the fissionable material required for their future electric power generation. It, therefore, constitutes a threat to their independence, which will be greater in proportion to the extent that this atomic power generation is developed through Agency aid".

Safeguards

The Indian view was that the "elaborate safeguards" provisions of the draft Statute of the IAEA were similar to a situation in which "not the slightest leakage takes place from the walls of a tank while ignoring the fact that the tank has no bottom". According to India, "the present safeguards will have their maximum effect in the case of the technically underdeveloped countries which require external help in order to develop peaceful atomic power programmes and which are, ipso facto, least in a position to make atomic weapons. Since most of the countries of Asia, Africa and Latin America are in this position, the present safeguards will give the Agency maximum powers of interference in such area".

Hence India also raised the question of "safeguards against safeguards system" of the NPT and compared the NPT safeguards to maintaining "law and order in a society by placing all its law-abiding citizens in custody, while leaving its law-breaking elements free to roam the streets". When the draft of the NPT was discussed at the Eighteen-Nation Disarmament Committee the seven developing nations of the ENDC criticizing the draft, indicated their willingness to support the Treaty, provided it dealt with questions like vertical proliferation and security guarantees more explicitly and realistically and if the safeguards provision (Article III) was brought in line with the U.N. General Assembly Resolution 2028 of November 1965 so as to remove the discriminatory nature of the NPT safeguards exempting the Nuclear weapon States (NWS) from its purview. The support given by developing nations to the Nuclear Non-Proliferation Regime (NNPR) in general, and to the NPT in particular, is evident from the fact that out of 114 adherents (signatories and those who ratified it), at least 88 are developing nations.

From the first NPT Review Conference onwards, the two distinct approaches to the non-proliferation regime by the Non-Nuclear Weapon States (NNWS) and NWS began to surface. While developing nations (Group of 77) enthusiastically worked towards a consensus and a final declaration before the conclusion of the first NPT Review Conference in May 1975, they also highlighted the linkage of other issues, such as an end to underground nuclear tests, a substantial reduction in nuclear arsenals; a pledge not to use or threaten to use nuclear weapons against non-nuclear parties to the Treaty; concrete steps towards substantial aid to developing countries in the peaceful uses of nuclear energy; the creation of a special international regime for conducting peaceful nuclear experiments; and an undertaking to respect all nuclear weapon-free zones.

Guarantees

More concrete proposals appeared in the form of three Protocols. Under Protocol I, it was proposed that there should be a ten-year moratorium on all underground tests as the number of NPT members reached 100, under Protocol II, the super Powers should accept further reductions of strategic delivery systems of the Vladivostok ceilings of 2,400 and 1,300 respectively by at least 50 per cent as soon as the number of NPT membership rose to 100. An, under Protocol III, they raised the question of nuclear guarantees and no first use of nuclear weapons. The NWS, on the other hand, concentrated on technical issues and "rejected out of hand all the proposals of the Group of 77."

The consensus at the first NPT Review Conference was replaced by confrontation at the second review Conference. This time, there was again an attempt to revive the consensus, though unsuccessfully. Instead, the political vs. technical controversy between the NNWS and the NWS was much louder, and unrestrained. Apart from the specified criticism of the clandestine proliferation cases of Israel and South Africa, and of the incresed and virtually uncontrolled strategic nuclear arms race, the Group of 77, in their working paper, attacked the NWS for their failure to make any progress in negotiating nuclear disarmament under Article VI of the NPT.

It also regretted that the NWS had ignored the recommendations of the UN Special Session on Disarmament in 1978, particularly regarding the cessation of the qualitative improvement and development of nuclear weapon systems, the cessation of production of all types of nuclear weapons and their means of delivery, and of the production of fissionable material for weapon purposes; and a comprehensive, phased programme with agreed time frames, whenever feasible, for progressive and balanced reduction of stockpiles of nuclear weapons and their means of delivery, leading to their ultimate and complete elimination at the earliest possible time.

It also pointed out that nuclear weapon tests were proceeding at a fast rate, as proved by the fact that between 1970 and the end of 1979 there were 153 nuclear tests by the United States and 189 by the Soviet Union. Hence the Group of 77 recommended that the NWS should prove by their deeds (and not purely by lip service) their commitment to Article VI of the NPT; the super Powers should ratify the SALT II Agreement; the nuclear weapon Powers should conclude a comprehensive test ban treaty; pending such an agreement, they should stop testing; and they should agree on the non-use of nuclear weapons.

(To be concluded)

[24 Aug 82 p 8]

[Text]

IN the second part of his article, Dr Poulose lists the principal objections of developing nations to the existing non proliferation regime. Citing the example of Latin America, he presents the case for extensive nuclear cooperation among the countries of Asia, Africa and Latin America, from which "they have nothing to lose except their nuclear serfdom and everything to gain". Dr Poulose concludes with suggestions for an institutional framework for such cooperation and cautions India and Pakistan against jeopardising the common cause of the Third World against atomic colonialism"

THE principal objections of developing nations to the present nuclear non-proliferation regime are the following. The norms, rules, procedures and institutions, which constitute the present non-proliferation regime, are instruments of technological domination. The socio-political and economic foundation of the present world order is unjust and inequitable; likewise, the nuclear world order of today, based on the present non-proliferation regime, is discriminatory, exploitative and hierarchical, truly reflecting the dichotomy of the nuclear haves and have-nots.

Developing nations do not see the possibility of any widespread horizontal proliferation (although exceptional cases may not be ruled out); guesses, exaggerations, speculations and conjectures are all that they have been seeing in the last 35 years in the name of horizontal proliferation (except the two notorious cases of Israel and South Africa).

They resent, therefore, the imputation often made that they might subvert the civilian nuclear technology for the clandestine use of reactors as potential "bomb factories" by diverting the plutonium accumulated or using the enriched uranium fuel. They believe that the policy of "locking up of technology" is to keep them in perpetual technological bondage, and that nuclear proliferation is a political problem. Hence they are convinced that it is a deliberate policy of the Nuclear OPEC to explain proliferation as though it is a technical issue, in order constantly to improvise their policy of denial and control.

Energy Needs

Developing nations have been hurt by the energy policy of the nuclear OPEC of "over-consumption and waste" of valuable fossil energy instead of sharing it more equitably; and especially by their callous indifference to the energy requirements of poor nations. Developing nations are fully aware of the more expensive nuclear economics but they regret that their integrated energy programme has been distorted to give the impression that nuclear energy is the ultimate of their energy policy. A nuclear non-proliferation regime whose norms and rules have very little to do with vertical proliferation is only a marginal non-proliferation regime. The NNWS always regarded as an imposition restrictions other than those provide under the IAEA Statute and NPT.

Nevertheless, developing nations have always been cooperating with the NWS and nudging them towards the goal of a universal non-proliferation regime instead of rejecting the imperfect one. A new or universal nuclear non-proliferation regime can be created partly by reforming the available institutions and partly by revising the norms and rules. But the process of consensus-building, which alone can reconcile the energy requirements of developing nations and the non-proliferation goals of the NWS, is fundamental to a universal non-proliferation regime.

First, the NNWS, especially the detractors of the present non-proliferation regime—those whose policies may be interpreted as virtual non-participation—have to be brought back to the fold. Fortunately, Argentina, Brazil, India and Pakistan—unlike South Africa and Israel

—have been enthusiastic supporters of a universal non-proliferation regime. Although none of them is a party to the NPT, Argentina and Brazil have accepted the Tlatelolco Treaty and the IAEA Safeguards. India and Pakistan have also accepted the IAEA Safeguards, though not totally. India, Argentina and Brazil are also parties to the Partial Test Ban Treaty (PTBT). Their declaratory policies indicate that they are still clearly committed to non-proliferation, thereby rejecting a nuclear weapon policy.

Argentina and Brazil have taken a lead in proving their bona fides by concluding some historic nuclear cooperation agreements in 1980, which would set at rest all speculations about their going nuclear and the possibility of a nuclear arms race in Latin America. The record of India and Pakistan is not exemplary in this respect. India exploded a nuclear device in 1974 which she still describes as a peaceful nuclear implosion. However, there is no evidence yet to show that she has changed her policy to that of a nuclear weapon Power, nor is there any proof of "nuclear weapons in the basements". Pakistan has become a suspect nation ever since reports about an enrichment plant being constructed at Kahuta, allegedly as a prelude to building a nuclear device.

India and Pakistan have, therefore, a great responsibility, as leading developing nations, especially in the field of nuclear technology, not to act in a manner contrary to the trend set by Argentina and Brazil in 1980. Developing nations have nothing to lose except their nuclear serfdom and everything to gain by extensive nuclear sharing among them in three separate regions—Latin America, Africa and Asia.

At the bilateral level, already several agreements of nuclear cooperation exist since 1962 among developing nations. These cover a wide range of subjects such as nuclear physics, nuclear chemistry, uranium prospecting, production and processing, manufacture of nuclear fuel elements and exchange of information and experience in the management of large projects like nuclear reactor construction. At the multilateral level, Latin America has given the lead in nuclear cooperation to the Third World.

Thus, developing nations have already been initiated into, and involved in, the process of cooperation and these building blocks are the most encouraging signs for further cooperation. Nuclear cooperation in particular implies that it is capable of eliminating the perennial causes of subregional, regional and mutual rivalries and thereby undermining the very rationale of a nuclear weapon programme.

No Idle Talk

This is not mere idle talk. After the signing of the historic Nuclear Cooperation Accords between Argentina and Brazil on May 17, 1980, the Presidents of both countries proudly declared that the agreements would "refute the myth of a nuclear arms race between us". Commenting on the agreements, Castro Madero, Argentina's nuclear wizard, observed that they "would put an end to arguments used by industrial nations to deny technical assistance to countries like Argentina and Brazil because these countries imagine we are embarked on a nuclear arms race and that our rivalry endangered world peace".

Neither in Asia nor in Africa is there anything equivalent to Latin American nuclear cooperation except bilateral agreements. But they can replicate Latin American models to suit their particular nuclear programmes. What is urgently needed now is an institutional framework of nuclear cooperation embracing Latin America, Asia and Africa. This is all the more necessary because the handful of States versatile in civilian nuclear technology are at present confined to Asia and Latin America. If one imitates the West European example of EURATOM, developing nations can institutionalize their nuclear cooperation by designating it as the Third World Atomic Community.

Using this community as the nucleus, developing nations can prepare a ten or fifteen-year profile of nuclear cooperation—both scientific and commercial—covering the whole gamut of a peaceful nuclear programme, which would perhaps lay the foundation of nuclear self-reliance in several critical areas where the required technology and assistance are denied to developing nations. This idea is predicated on the pooling of Third World resources—economic, technical, scientific and manpower.

What should be the factors determining the framework of Third World nuclear cooperation? The Third World exists geographically in three different continents, unlike West European nations, all of which belong to one continent. The West European countries are well advanced industrially, scientifically and technologically. Developing nations are still coping with their backwardness.

Whatever psychological and political barriers existed among the West European States disappeared after World War II. Developing nations, however, have been faced with almost insurmountable psychological barriers and traditional and historical rivalries, and have often engaged in fratricidal wars due to cultural, religious, linguistic and ethnic diversities. Yet, one can define a certain degree of community of interest among them because of some shared experiences such as their struggle against colonialism, their grinding poverty, their urge for modernization and rapid economic development and their continuing struggle for a new international economic order.

United Stand

Developing nations have in the past displayed remarkable resilience in their united stand when faced with economic and technological domination over them by the developed countries. The Group of 77, the UNCTAD conferences, the North-South negotiations, the non-aligned conferences, the South-South dialogue, their economic and technical cooperation and their solidarity against racism, colonialism and Zionism, are all manifestations of their ability to unite. Therefore, it is inconceivable that they cannot cooperate against atomic colonialism.

It is essential that India and Pakistan should not reverse their nuclear policy at this critical juncture and become so short-sighted as to jeopardize the common cause of the Third World against atomic colonialism. All the frontline nuclear Powers of the Third World have a long history of actively championing the cause of nuclear disarmament. They used to accuse the nuclear weapon Powers and their arms control policies as attempts to "disarm the unarmed". If these countries therefore, wavered in their present nuclear policy, went back on their past record on nuclear disarmament and exercised their nuclear option to go nuclear, they would be playing into the hands of the NWS who have always been accusing them of nuclear ambitions.

The NWS have a similar responsibility not to push their policy of denial and control too far and not to drive the nuclear have-nots to a point where they will have to fight with their backs to the wall.

Either we are going to create a nuclear world order based on justice and equity for all, in which case, all discriminations and special privileges will crumble or the world will be entering another dangerous decade of a multi-nuclear international system. In fact, the future of horizontal proliferation and progress towards a just and equitable universal non-proliferation regime will be decided by the policies of the NWS, particularly of the super Powers.

(Concluded)

CSO: 5100/7150

ECONOMIC ASPECTS OF NUCLEAR ENERGY DEVELOPMENT IN CSSR VIEWED

Prague FINANCE A UVER in Czech No 6, 1982 pp 365-373

[Article by Dr [illegible]: "Some Economic Aspects of the Development of Nuclear Energy in Czechoslovakia"]

[Text] The need for a balanced and uninterrupted development of the Czechoslovak national economy compels us to focus increasingly greater attention on consistent observation and assessment of the inputs to and outputs of this system in relation to our projected and planned objectives. The sources of energy in all their realistically exploitable forms represent one of the essential inputs in our national economic system. These resources have increasingly framed the planning of our economic development.

As is known, the Czechoslovak economy is based on energy-intensive production, and our specific per-unit consumption of energy is considerably higher than in many other industrially advanced states.

It is obvious now that the supplies of conventional sources of energy (coal, crude oil and natural gas) are not unlimited and that their production is becoming more and more difficult and expensive. Widespread efforts are being made abroad lately to exploit such unconventional kinds of energy as solar, wind and tidal energy, energy generated by biological processes, geothermal energy and so on, with very favorable results in some instances.

In view of the geographic and weather conditions in the CSSR, we cannot presume that these sources can be utilized to any major extent in our country so as to affect positively our energy balance, although they may have favorable economic effects as local and auxiliary resources.

Toward the end of the Sixth 5-Year Plan, our state's balance of energy, until then focusing mainly on increasing imports of crude oil and natural gas, was reassessed so that only very slight increases in imports would be considered for the future. In the Seventh 5-Year Plan, conventional sources of energy, including hydroenergy, will increase by about five percent, but according to realistic projections, in the Eighth 5-Year Plan this increment will be at most .3 percent annually, i.e., 1.5 percent for the entire 5-Year period. Due to price increases, even this slight increment will affect out balance of payments in the amount of about Kcs 80 billion in 1990, whereas in 1980 the negative balance of Czechoslovak imports and exports of fuels and energy, including fuel elements for nuclear power plants, was no more than Kcs 28 billion. In other words, we shall need an amount approximately equal to all Czechoslovak exports for 1980 to cover the import of fuel and energy in 1990.

In view of everything mentioned above, our only chance for the future is to concentrate on exploiting energy from nuclear sources and in this way covering the entire increase in the consumption of electric power. The following approximate increases in the sources of electric power are projected for the Seventh and Eighth 5-Year Plans (see Table 1).

Table 1 (Data given in 10^9 Kwh)

Source	1980	1985	Increment	1990	Increment
Generation					
in steam power plants	64.0	63.9	- 0.1	59.8	- 4.1
in hydroelectric plants	4.4	4.9	- 0.5	8.0	+ 3.1
in nuclear power plants	4.0	16.0	+12.0	33.1	+17.1
Import	2.8	4.2	+ 4.2	5.1	+ 0.9
Total sources	75.2	89.0	+13.8	106.0	+17.0

This objective should be achieved in accordance with the concept for the development of nuclear power, approved by our government in 1978, on the basis of the construction of nuclear power plants equipped with VVER 440 and VVER 1000 reactors. According to this concept, about 7,280 megawatts [mw] of installed capacity should be gained before the end of the Eighth 5-Year Plan as a result of actual achievements in the implementation of capital investment; of that volume, 5,280 mw will be generated in power plants with 440-mw reactors and 2,000 mw in power plants with 1,000-mw reactors.

The planning agencies set investment limits and allocated considerable financial assets to implement this concept. In the Seventh 5-Year Plan alone, construction projects with budgeted costs of Kcs 55 billion will be launched in the branch of power engineering, representing almost 50 percent of industrial investment to be initiated during this 5-year period.

The state budget helps finance construction projects for nuclear engineering with subsidies amounting to 80 percent of the costs in chapters II-VIII. Internal resources created by the Ministry of Fuels and Power will increase in proportion to the increase in wholesale prices of power engineering resources as of 1 January 1981 and to further adjustments of those prices during the 5-year plan, and their share in these construction projects will be expanded. According to preliminary quantifications, however, even with lower payments to the state budget pursuant to the new method, the state budget must continue to subsidize the construction of nuclear engineering facilities. Thus, the center will continue to exert its influence so as to [illegible] the [illegible] of highly sophisticated construction projects by the federal ministry.

Specific investment costs per installed capacity in nuclear power plants under construction depend largely on the selection of the building site, its geological requirements for seismic safety and other factors, such as the continual price increase of costs in relation to the schedule of construction, improvement of operational safety, etc (see Table 2).

Table 2

Specific Costs Per Installed Capacity in Nuclear Power Plants

Nuclear power plant	Typical output (mw)	Projected capacity (mw)	Budget costs, chapter I-XI (Kcs mil.)	Budget costs per kilowatt (Kcs)
V-1	2 x 440	826.0	6,127.6	7,418
V-2	2 x 440	850.5	8,143.0	9,574
Dukovany	4 x 440	1,701.0	17,500.0	10,288
Mochovce	4 x 440	1,736.8	25,830.0	14,872

These costs can be compared with the cost of coal-fueled power plants only on the basis of certain calculations,* because no coal-fueled power plants with comparable capacities are being built at present in our country. Calculations based on specific investment costs of coal-fueled power plants with units of 200-mw capacity, which began operation around 1977, were converted to the price level of 1980, and thus it was ascertained that specific investment costs per installed capacity in V-1, the first Czechoslovak nuclear power plant, are approximately 20-25 percent higher than in conventional power plants. However, this increase is offset by lower operating costs of fuel and its transportation, minimum exhaustion [illegible], conversely, represents a major technical and economic problem in conventional power plants; the costs of its elimination (construction and installation of separators) do not appear in these calculations.

If we compare specific investment costs of Czechoslovak nuclear power plants with the prices of power plants built by Western companies** (for instance, according to a signed contract, France will build in Egypt two nuclear power plants of 1,000-mw capacity at a cost of $2 billion; Asea-Atom Company of Sweden offered to build in Turkey a power plant of 600-mw capacity at a cost of $[illegible] million; Canadian and U.S. entrepreneurs built a power plant of 600-mw capacity in Romania at a cost of $550 million), it is evident that specific investment costs of Czechoslovak nuclear power plants are on a comparable level.

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* Vitura, J., Slechta, V.: "The Development of Specific Investment Costs in Coal-Burning and Nuclear Power Plants in a Long-Term Perspective. [illegible], 1980, No 11, p 732.

** From REUTER, AFP, CTK and other news agency reports.

The efficiency of funds invested in the construction of nuclear power plants at present, when the overwhelming majority are in various stages of construction, is affected to a major extent by the maintenance of schedules stipulated in the timetable for investments and planning as well as in the construction proper, which thus far has been much plagued by problems in supplier-consumer relations reflecting special interests of the participating organizations and requiring resolution by arbitration. This also prolonged the schedules for construction, according to current estimates, for about 10-12 months in individual power plants.

The V-1 power plant in Jaslovske Bohunice is now generating electric power from nuclear sources in a trial run. In 1979 the first unit in this power plant generated 2,145 [megawatt hours], i.e., 3.2 percent of all electric power produced in the CSSR; in 1980, two units (the second unit having begun operation in May 1980) generated 4,522 mwh, in other words, the share in the total production rose to 6.2 percent. It is estimated that in 1980 production increased by about another 11 percent.

According to summary accounts for 1979, the cost per 1 mwh from production was Kcs 154.50 and in 1980 Kcs 144.30; projected costs of production were approximately Kcs 200/mwh depending on the season of use. These costs are comparable to the costs at steam and hydroelectric power plants, which were Kcs 200.40 and 140.60, respectively, per mwh delivered in 1980. At present, their level has been favorably affected mainly by better utilization of fuels due to above-plan production and reduced costs for repairs and maintenance. In the future, we must expect that the costs of electric power from nuclear sources will be influenced by the anticipated increase in the prices of fuel elements in accordance with world trends as well as by higher depreciations in conjunction with rising budget costs of the power plants under construction. At the same time, the cost of measures related to radiation protection and storage of radioactive waste will become evident.

A particular problem for nuclear power plants is their fuel (uranium elements stored in containers)--its transport, storage, use and, after combustion, safe disposal. The specifics of its consumption (one third of the elements in the reactor are replaced every year) also call for appropriate approaches to the treatment of its supplies. Up to the end of 1979, nuclear fuel was financed by credits for future costs with 2-year depreciation. In the Seventh 5-Year Plan, nuclear fuel is included in the group of regulated supplies and financed by allotments of credits and revolving funds. It is depreciated according to norms of consumption.

The inclusion of nuclear fuel in the group of centrally controlled prices may cancel the impact of the estimated price increase on the development of supplies, but it is nevertheless presumed that supplies of fuel elements will increase almost three times in constant prices during the Seventh 5-Year Plan. However, total consumption of nuclear fuel during this period and the volume of its imports demand further specification in conjunction with the start of operations of individual capacities, and the pertinent international agreements must be amended accordingly.

The Production Base for Nuclear Power Engineering

Concurrently with the construction of the first Czechoslovak nuclear power plant in Jaslovske Bohunice, whose basic equipment, including the reaction, is predominantly Soviet-made, the CSSR began building its own production base to manufacture the equipment for nuclear power plants. The construction was launched on the basis of the 1974 bilateral Czechoslovak-Soviet agreement on cooperation and specialization in production, which specified the scope for Czechoslovak production and deliveries of equipment for VVER 440 reactors beginning in 1980, which was expanded in 1976 by a contract specifying the participation of the Czechoslovak machine engineering industry in the production of VVER 1000 equipment.

The original investment limit for this construction was set in 1973 at Kcs [illegible] and adjusted in 1975 to Kcs 7.2 billion, with the proviso that this sum will underwrite the manufacutre of the equipment for VVER 440 reactors. A limit of Kcs 990 million on all charges was set for imports of [illegible] technical equipment from the nonsocialist states during the Sixth 5-Year Plan.

Thus, preconditions were set for the FMHTS [Federal Ministry of Metallurgy and Heavy Engineering] to launch in 1974 an extensive construction program consisting of 37 projects with planned budget costs of Kcs 5,532,000,000 (of which Kcs 2,819,000,000 was for construction work). The overwhelming majority of these projects was completed and began test runs before the end of 1979.

As a result of the gradual specification of technical programs, the change in the model of the reactor, demands for greater safety and more items in production, the labor-intensive production of certain types of equipment exceeded the initial estimates. This called, among other things, for increased capital investment. Therefore, on the basis of the opinion of state experts, it was decided to raise the budget costs of the most important construction project in our nuclear program--the reactor room in the Skoda syndicate--by Kcs 270 million. By the same token, other construction projects planned in the nuclear program for initiation in 1980 at a total cost of Kcs 536 million were approved.

The above-mentioned volumes already include the results of the multilateral international agreement of the CEMA states on cooperation and specialization and mutual deliveries of equipment for nuclear power plants in the period 1981-1990, which further specified the terms and volume of Czechoslovak deliveries for the parties to the agreement during said period and presupposed that a production capacity of 2,000 mw year, including the first VVER 1000 reactor, would be achieved by Czechoslovak macine industry in the target year of 1985. However, additional investments will be necessary to manufacture additional VVER 1000 reactors and to achieve the projected production of two modules annually after that, the bulk and dimensions of the VVER 440 are about 50 percent higher, because the demands on the quality of materials and technological standards are [illegible] and [illegible] of the requirements for operational controls. This has also raised the demands on labor in individual components about 1.5 to 1.8 times.

Capital investment planned for the Sixth 5-Year Plan has been fulfilled and overfulfilled by all VHJ [economic production unit]. However, one of the vital preconditions for an orderly start of production of the equipment for nuclear power engineering--a prompt start of operations in these new facilities--could not be met. This concerns mainly the construction of the reactor room and buildings for control drive of fuel elements in the Skoda syndicate, whose completion has been delayed for more than a year. Moreover, the delay in the start of operations in the facilities is one of the reasons why in the period 1981-1984 Czechoslovak deliveries of reactors lagged .7 to 1.7 behind the multilateral CEMA agreement reactor delivery goals. Nevertheless, this shortfall has been essentially offset by the shift in the construction of power plants in our country as well as in other CEMA states.

In assessing capital investment for the nuclear program in general, it may be noted that during the 1974-1980 period, the production base of nuclear power engineering in the CSSR has been fundamentally built up, although during its building we had to overcome many difficulties stemming from gradual specification and from the overall requirements of its production.

Production and Sales of Nuclear Power Engineering Equipment

The FMHTS launched the manufacture of components for nuclear power plants in a total of 16 enterprises of the VHJ Skoda in Plzen, in the Iron Works of Vitkovice and in Sigma in Olomouc as follows:

Skoda in Plzen--modules of reactor equipment (39 nodes), steam turbines, generators, separators, equipment for condensation and regeneration;

Vitkovice--steam generators, volume compensators, reactor shield (10 nodes) for the Skoda syndicate delivered in the form of commercial goods;

Sigma--the primary pipeline, special pumps, special fittings and valves.

The gauging, safety and control electronic equipment is manufactured by the Machinery and Automation Plants VHJ in Prague and by enterprises of the Tesla syndicate.

The equipment manufactured by the syndicates of Skoda in Plzen and of Vitkovice, which represents in its volume and significance the crucial part of the production of nuclear power equipment in the CSSR, constitutes independent production sector 488--equipment for nuclear power plants, classified during the Sixth 5-Year Plan as machine engineering development program A 22. However, this branch failed to fulfill its projected task in the production of goods during the Sixth 5-Year Plan and its total production amounted to about 69 percent of the planned volume. Its production was underfulfilled because from the beginning the planning and start of its production has been plagued by certain adverse factors. The Czechoslovak share in the volume of the production and deliveries to other countries was gradually specified and determined; this process was basically completed as late as in 1979 by signing a multilateral agreement. Because the Czechoslovak and Soviet methods of processing technical documentation on production differ, its presentation and specification was delayed and thus the results in the development of special technologies and materials could not be sufficiently verified because this development proceeded simultaneously with construction of the production base and the start of production.

The most compelling problems were concentrated in the Skoda synidcate, which for a long time could not resolve satisfactorily the technical and manufacturing problems related to substantially more labor-intensive production that was initially estimated and to shortages of workers with the required qualifications.

Although the VHJ of Vitkovice had overfulfilled its planned production of goods, its turnover, the delivery of volume compensators and safety nodes for individual modules was also delayed due to work force shortages. On the other hand, the Sigma VHJ in Olomouc fulfilled its tasks in production and deliveries very satisfactorily, although its production is not included in the A 22 developmental program because it does not specifically concern nuclear engineering equipment and because it differs from conventional production primarily in the better quality of the materials used.

During the Seventh 5-Year Plan the production of goods for the nuclear program in the FMHTS will amount to Kcs 16 billion. The following volumes are planned in individual VHJ (see Table 3).

Table 3:

Category	Skoda	Vitkovice	Sigma
Production of goods for nuclear industry (billions of Kcs)	8.9	4.4	2.7
Percent of nuclear industry in total production of goods of the enterprise in the Sixth 5-Year Plan	5.15	1.65	12.40
In the Seventh 5-Year Plan	10.54	7.62	11.20

In view of the share of the production of the nuclear program in the total production of the enterprises and their considerable growth in the Seventh 5-Year Plan, the question of the overall impact of this production on the indicators of efficiency of production of enterprises gains in importance. In this respect, the FMHTS received a study dealing with the development of material and other costs in the production of steam generators, compensators and 10 safety nodes for reactors in the Vitkovice synnicate and of the production of 34 nodes for reactors in the Skoda synidcate in the chronological series of 1978-1986, when presumably the manufacture of model VVER 440 equipment will be completed. The study proceeded from the premise that during this period 60 units of steam generators, 16 units of compensators and 19 reactors modules, including safety systems, will be manufactured and delivered.

According to projections, in 1978-1986 the municipal enterprise in Vitkovice will have a share of material and other costs in the production of goods, without depreciation, in the range of Kcs 0.787 to 0.8216. This fact is determined by the production selection, i.e., the ratio of the number of steam generators, compensators and safety nodes manufactured in individual years, and by the effect of reduction in fixed costs. The overriding fact is that the high-cost requirement is within the range of current costs required for the whole enterprise and will not affect it adversely even in the future.

A slightly more complicated situation concerns the impact of the production of reactors on the economy of the Skoda municipal enterprise. Since the current wholesale price of the reactor is Kcs 422.4 million and since it is presumed that a total of 19 modules will be manufactured, the chronological series of the development of material costs in 1978-1986 follows a descending curve in relation to the manufacture of goods.

This development is again determined by production selection, i.e., the number and standard of modules in the process of production in individual years, by the chronological differentiation of costs and by savings of fixed costs. In 1980, costs rose to some extent due to higher operational costs in the new reactor room (3,000 percent for wages) compared with the turbine room (1,541 percent), from which the production had been transferred that year. Costs will increase in 1985-1986 because of the production selection, since the production of VVER 440 reactors will be almost completed and its volume will be low.

However, the cost of nuclear production in the Skoda municipal enterprise is disadvantageous in relation to the cost of the entire VHJ because material costs per koruna of output in sector 488 were up Kcs .1744 in 1980 and Kcs .1215 in 1984; total costs were up Kcs .1760 in 1980 and Kcs .0251 in 1984.

On the other hand, the production of the nuclear program is favorably reflected in higher labor productivity and returns on capital assets. In 1980-1984, labor productivity in gross individual production is on the average 2.5 times above the average for the entire VHJ and labor productivity 2.3 times above value added. Returns on capital assets (ratio of the production of goods/capital assets) in 1980 were lower in the production of the nuclear program than in the entire VHJ (nuclear program .5844, VHJ .7775), but beginning in 1984, this share in the nuclear program will rise to .977 and thus will exceed the share for the entire VHJ, where it will amount to .8033.

For 1980-1984 the indicator of profitability of production assets (ratio of profits to capital assets plus supplies) displays an ascending curve from

.0176 to .0880 and the indicator of returns on production assets (ratio of production of goods to capital assets plus supplies) from .[illegible] to .4543. Nevertheless, both indicators are below the level of the entire VHJ because they reflect the effect of a higher consumption of supplies while launching the new production, a higher value of supplies stemming from better quality of the materials used and the length of the cycle of production.

On the whole, it may be said that although its type is very unusual in certain ways (new materials, technology, skill of the welders, etc), the effect of the production of the nuclear program in the VHJ in Vitkovice and in Skoda does not adversely affect the overall economy of those VHJ, with some exceptions (returns in the Skoda municipal enterprise); on the contrary, it affects favorably certain key indicators (higher profits, productivity).

In terms of wholesale prices, the amount of profits for all manufactured components was determined according to an appropriate sectoral costing formula.

Naturally, in the future, efficiency of production will depend on the annual production of the planned number of manufactured modules and on the total number of modules manufactured during the whole period.

To avoid any unpredictable effects of the nuclear production on the overall economy of the Skoda syndicate, an independent planning, financing and assessment system has been developed and introduced for the reactor plant of the Skoda municipal enterprise.

According to the production proper, exports, and imports, the technological equipment required for the production of each module for the nuclear power plant may be divided into:

1. equipment made in the CSSR:
   a) for internal use,
   b) for export on the basis of the multilateral agreement,
   c) for export according to bilateral agreements.
2. imported equipment:
   a) according to multilateral agreements,
   b) according to bilateral agreements,
   c) from the nonsocialist states.

The volume of CSSR production and exports is based on the 1974 CSSR-USSR bilateral agreement and its follow-up multilateral agreements for the

1981-1990 period within the CEMA framework and with the Socialist Federative Republic of Yugoslavia, which were concluded in June 1979.

Initial considerations of the volume and terms of the deliveries of modules for the reactor equipment for the CSSR and for export, which projected the manufacture of 19 VVER 440 modules in the CSSR prior to 1986 (9 of them for export) and the manufacture of 11 VVER 1000 modules before 1990 (6 of them for export), recently have been further specified in accord with the progress of the construction and the needs of the interested states. In the CSSR, sector 488 produced goods worth Kcs 2,743,000,000 before the end of 1980 and the value of goods exported on the basis of the CSSR-USSR agreement amounted to Kcs 833 million in wholesale prices or Kcs 1,128,000,000 in prices including all charges. So far, exports have been very lucrative, as evidenced by the data concerning the differential indicator (DI), replacement value if R1 and the per kg price (see Table 4).

Table 4

Category	1976	1977	1978	1979	1980
Differential indicator (in percent)	127.36	106.62	160.05	155.69	91.23
Replacement value of R1	10.21	14.06	10.66	10.63	18.35
Per kg price, all charges paid	84.00	81.00	65.61	75.80	139.48

The export of the first reactor to the Hungarian People's Republic in 1980 resulted in a lower differential indicator and replacement value, but in the deliveries of five additional reactors this drop will be balanced by higher foreign prices, and beginning with the sixth module, the export of reactors will be almost as effective as the export of other equipment.

The per kg price of the exported equipment for nuclear power engineering is on the level of our top leather-processing and shoemaking equipment and considerably more effective, for instance, than exports of our passenger automobiles and trucks or our construction and road-building machinery.

A multilateral agreement between the CEMA states stipulated the volume and terms for mutual deliveries of the VVER 440 reactors. This agreement involves approximately 86 percent of the equipment needed for the construction of a whole power plant. The remaining 14 percent of the equipment (about R30 million), which is not included in the agreement, must be either imported on the basis of a bilateral agreement with the USSR or manufactured in the CSSR. Moreover, each module calls for imports from capitalist states valued at about Kcs 10 million.

The agreement set firm prices of 20 basic types of equipment, which cover some 70 percent of the price of equipment for nuclear power plants. This price-setting facilitated relatively accurate estimates of the economic efficiency of our exports and of the total export-import balance and thus the determination of its impact on our domestic economy.

The prices of other types of equipment will be negotiated on a bilateral basis according to current practice in contractual pricing. So far, preliminary calculations indicate that during the Seventh 5-Year Plan, the total positive Czechoslovak balance of exports and imports of equipment for nuclear power engineering in relation to other partners in the agreement will total about Kcs 2 billion and that exports of this equipment will be effective.

In view of the achievements in the development of nuclear power over the recent years and of the Czechoslovak economic potential in the future exploitation of energy generated from nuclear sources, it is obvious that at the beginning of the Fifth 5-Year Plan our party and state leadership made the right decision on the development of nuclear power engineering and the production of equipment for it in our country and that it set Czechoslovak power engineering on the right course. The following facts confirm this as a worldwide trend that is far from completed with the current standard and method of control and exploitation of nuclear energy.

According to data furnished by the International Atomic Energy Agency*, 21 reactors with total capacity of 16,000 mw were launched in the world in 1980 alone, and thus the total number of reactors in 22 countries increased to 247 with a total capacity of 146,000 mw. At present some 220 additional reactors with 200,000 mw capacity are under construction in 30 countries.

The share of electric power from nuclear sources in the total consumption of individual countries is now on the average in the 5- to 15-percent range, it is is expected to increase to 35-50 percent over the next decade.

At present, the USSR and other states have already developed the so-called fast breeder reactors, which are now in trial run; they make it possible to utilize far more (up to 70 times) nuclear fuel and are expected to begin regular operation in about 1985. The fact cannot be overlooked that the potential of nuclear power engineering is increasingly used to generate thermal energy in thermonuclear plants already in operation or under construction, primarily in the USSR and in France.

These facts prove that there are ample opportunities open for the exploitation of nuclear power, which reaffirms the vital axiom that the CSSR is not lagging behind in this area and that--albeit with great effort--the processes of producing nuclear power equipment and industrial use of nuclear power for peaceful purposes have been successfully mastered in our country with the aid of the USSR and in cooperation with other CEMA states. Thus, essential preconditions for a further balanced development of the Czechoslovak economy and society are being created at the same time.

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CSO: 5100/3128

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* International Atomic Energy Agency-1980 Bulletin, Vienna, 1980.

FUTURE BLEAK FOR URANIUM PROSPECTS

Johannesburg THE CITIZEN in English 22 Sep 82 p 22

[Article by Patrick McLoughlin]

[Text] THE grim state of the world uranium market is fully mirrored in the annual statements of Mr Dammy Watt — chairman of Harmony and Blyvooruitzicht — which were released yesterday.

Blyvoor will probably stop uranium production and Harmony faces some "rationalisation" Mr Watt said that unless Blyvoor was able to enter supply contracts at "substantially higher" than current market prices, the mine would cease production of uranium oxide around November, 1984, at which stage the processed uranium stockpile would be adequate to meet outstanding contracts.

Last year uranium spot prices continued to decline and there was a considerable surplus stockpile of uranium overnging the market.

Much of the surplus material was under the control of utility companies in the US which found the cost of carrying them to be intolerable at current high interest rates.

Mr Watt said liquidation of the stockpiles at prices below the cost of production for many US mines had been one of the main factors in the continued softening of the market.

In his Harmony report, he says the fall in the value of the rand against the dollar had largely offset the drop in US dollar prices and significantly improved Harmony's uranium revenue in rand terms.

With the mix of long and short-term sales contracts — and at the current rand/dollar exchange rate — Harmony expects to continue to receive profits from its uranium operation this year.

In the longer term, increased contract prices would be necessary to ensure profits at current production levels. "Failing such price increases, some form of rationalisation of uranium production to reduce operating costs may be necessary."

Mr Watt says Harmony's gold production for the current year should be about the same and uranium production should remain fairly constant "but significant changes could be dictated thereafter by market conditions.

An interim dividend of 85c was declared early this month. Mr Watt says that assuming the gold price received will be around R15 000 a kg — equivalent to about $405 at the currentrand/dollar exchange rate — for the half year to March 31, that uranium sales will take place on schedule and cost escalation will not exceed 14 percent annualised, a dividend "somewhat higher" can be expected in March.

A total of, say, 180c would compare with the previous 210c payout.

Capex, which last year totalled R50.5-million, is projected for the current year at only R29-million. Mr Watt said it had been decided, because of the uncertainty over the gold price likely to be received, to limit capex wherever possible.

Thus expenditure on the No 4 service shaft would be restricted to about R10-million and that on the No 4a ventilation shaft and related surface installations would be postponed until the sinking of No 4 was completed.

Mr Watt said last year's ore throughput was only slightly less than the previous period's record levels. With the exception of the Merriespruit uranium plant, operations at the mine had now stabilised at the full productive capability of the various installations and facilities.

The mining plan did not at this stage involve any increased extraction from high grade areas and therefore any further improvements in gold output in the near future would be exclusively dependent on the introduction of programmes to improve efficiency of mining and recovery operations.

Last year 7,66-million tons of ore were treated (7,67-million tons), while grade was 4,1 g/t (4,12 g/t), resulting in gold production of 31 396 kg — down by 232 kg.

The quantity of slime treated for uranium was, at 6 687 000 tons, down 106 000.

Blyvoor May Stop as Early as 1984

BLYVOOR is likely to cease production of uranium by November 1984 unless it is able to sign supply contracts at prices "substantially better" than current market prices.

This is one of the shocks for shareholders provided by chairman Dammy Watt in his annual report.

Mr Watt said that last year spot uranium prices continued to decline and there were still no clear signs of any revival in the ordering of new nuclear power plants.

It therefore appeared that there was little prospect of any material improvement in market conditions in the short to medium term.

Blyvoor was in the fortunate position of having concluded satisfactory contracts for the bulk of the uranium to be produced over the next few years.

But without a big rise in prices, production would stop in 1984 when the processed uranium stockpile contained sufficient material to fulfill all outstanding contracts.

Last year Blyvoor produced 293 tons of uranium oxide — down 29 tons on the previous period — and profits from uranium operations was R7,1-milion compared with R12,4-million.

The decrease in uranium earnings was due to rising costs, a falling revenue and slightly lower sales.

The latter followed revised delivery schedules specified by customers, which resulted in an increase of R1-million in the value of processed uranium on hand.

Blyvoor's total working profit last year was R134,7-million (R175-million).

This decrease was composed of a fall in working revenue of R18,9-million, a rise in total expenditure of R16,1-million and a fall in uranium profits of R5,3-million.

Capex at R16,7-million was slightly less than forecast and the projection for the current June 30 year is R15-million. The major part of this will be spent on underground development, installations and on mining equipment.

Money will also be spent on investigating the mining potential of other reef horizons within the company's lease area.

Capex for the year to June 30, 1984 is expected to also be around R15-million. However, in subsequent years it will fall substantially.

One bright note for shareholders is provided by Mr Watt's dividend forecast. A total of 190c was paid for the June 30, 1982 year.

For the current year, Mr Watt expects a moderate fall in the gold yield as the tempo of operations declines in the West Driefontein tribute area.

This drop in grade will not be countered by increasing the tonnage treated as the mill is already running at virtually full capacity and therefore gold production will drop marginally.

Assuming that the increase in costs in the next six months can be limited to a rate not exceeding 15 percent on an annualised basis, and the gold price received for the period is of the order of R15 000 a kg, Mr Watt says it is possible that the interim dividend declared in December could be slightly more than the 70c final dividend declared in June.

CSO: 5100/5709

INCREASED URANIUM SALES EXPECTED

Johannesburg SUNDAY TIMES-BUSINESS TIMES in English 5 Sep 82 p 3

[Article by Neil Behrmann: "SA is in Line for More Sales of Uranium"]

[Text]

LARGE stockpiles overhanging the market have pushed the free-market cash uranium price down to a five-year low of $17 a lb.

But production cuts, especially in the United States, mean that South African mines will be getting a much larger share of the market in coming years.

Subdued producer and consumer delegates at the seventh annual symposium of the Uranium Institute agreed that the price had fallen to the lowest level since the end of 1977 because production and accumulated stocks continued to outweigh demand.

The huge price increase in the Seventies which carried uranium prices up from $6.50 a lb in 1973 to a peak of $43 a lb in 1978 boosted exploration and production.

"These production increases, combined with radically slower-than-expected uranium demand growth, produced an imbalance between supply and demand," said Jim Bonny, vice-president of marketing at the Saskatchewan Mining Development Corporation in Canada.

The Uranium Institute supply and demand committee forecasts a further reduction in nuclear-generating capacity, and consequently lower uranium requirements up to 1990.

Cancellations of nuclear reactors have mainly come about because of the deep international economic slump.

Electricity demand has declined and utilities have found it difficult to raise finance and hold uranium stocks while interest rates remain high.

Over and above this situation, the weakening oil market has reduced concern over further energy supplies.

So it has been much more difficult to convince the public that nuclear power is a safe, reliable and economical energy source.

Although US producers have cut output severely, the Uranium Institute concludes that sufficient production capacity will be available to supply existing reactor programmes at least until 1985.

By 1995 demand will outstrip present mine capacity, but there are more than sufficient potential supplies to satisfy future consumption.

Even so, the price must eventually rise to encourage mining groups to invest money in uranium projects.

James Vaughan, vice-president of Nuexco, an international uranium-broking concern, forecasts that the cash uranium price will fall further.

"We were hoping that the market would bottom out at $30 then $25, but the price kept falling. It now looks like a jagged line of a cliff."

Mr Vaughan reckons that supplies are currently running at 110-million lb a year, about double consumer requirements.

"The basic problem is that output has been outpacing demand since 1970, so stocks continue to rise.

"Eventually the market will come into line because production is falling and consumption is increasing, but it will take several years."

The market has been so bad that utilities, especially General Public Utility — owner of the faulty Three Mile Island reactor — has been dumping uranium stocks on the market.

"The uranium market is not following textbook economics," said Robert Wolcott, president of Nuexco.

"By July this year 17-million lb of uranium was on offer for near-term sale, but 90% of this material was offered by users and 70% of the buyers were producers.

"The price has fallen to such low levels that it has paid producers to buy material for resale rather than mine it themselves."

Participants at the meeting, however, emphasised that the free market in uranium represents only 10% to 15% of the market.

Most of the material is sold on a contract basis. For example, it is estimated that South African mines are selling their uranium for around $30.

Yet the falling free-market price does have an inflation potential because it is difficult to negotiate new contracts at prices which are way in excess of free-market levels.

Nuexco estimates that the US, presently the largest producer, will reduce output from 38,7-million lb last year to about 28-million lb this year.

Next year US production could decline to just over 21-million lb.

This is good news for South Africa, because its relative share of the world market will increase markedly.

Nuexco forecasts that South Africa's production will rise from 16,5-million lb this year to 17,6-million lb in 1983.

Canada, only slightly ahead of South Africa, is the second-largest producer after the United States.

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